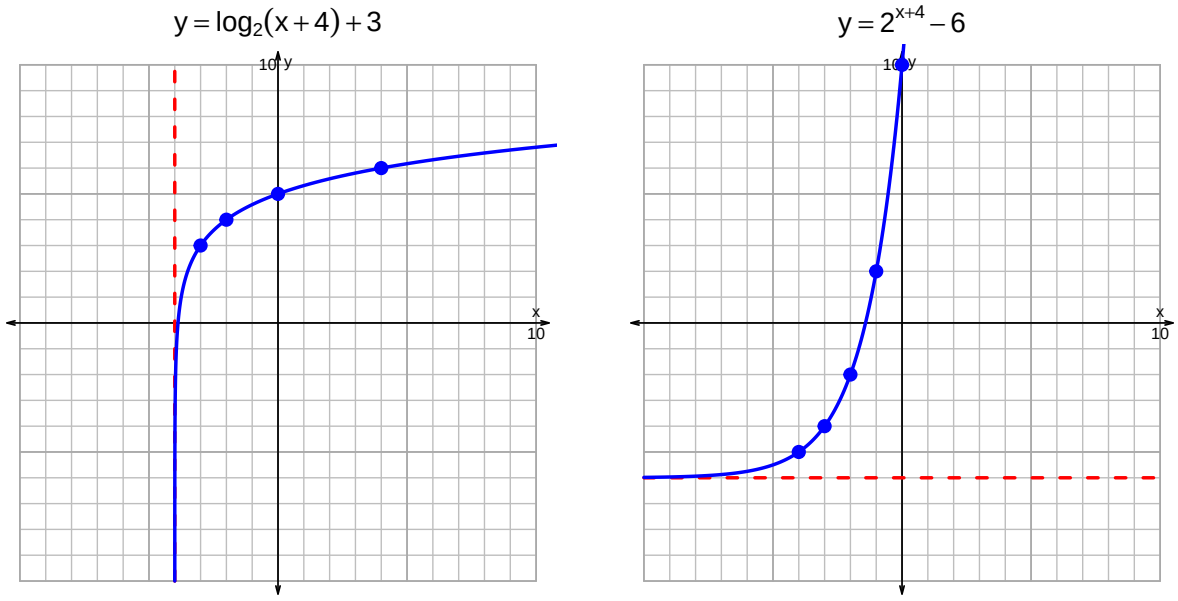
Name: Date:

s18quiz: EXP LOG (Solution v126)

1. Graph $y = \log_2(x+4)+3$ and $y = 2^{x+4}-6$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$13 = \left(\frac{4}{3}\right) \cdot 10^{7t/5}$$

Divide both sides by $\frac{4}{3}$.

$$\frac{13 \cdot 3}{4} = 10^{7t/5}$$

Take log, base 10, of both sides.

$$\log_{10}\left(\frac{13 \cdot 3}{4}\right) = \frac{7t}{5}$$

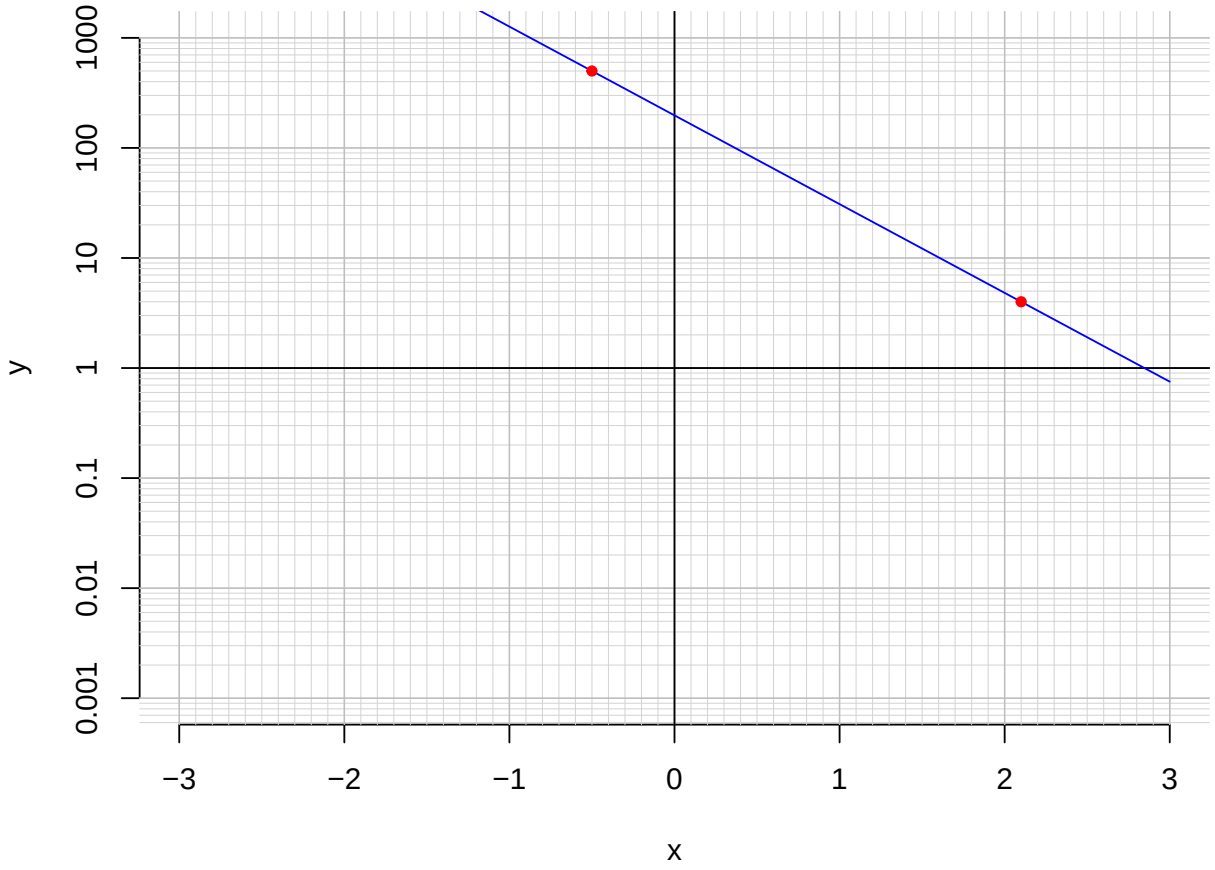
Divide both sides by $\frac{7}{5}$.

$$\frac{5}{7} \cdot \log_{10}\left(\frac{13 \cdot 3}{4}\right) = t$$

Switch sides.

$$t = \frac{5}{7} \cdot \log_{10}\left(\frac{13 \cdot 3}{4}\right)$$

3. An exponential function $f(x) = 198 \cdot e^{-1.86x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(2.1)$.

$$f(2.1) = 4$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{-1}{1.86} \cdot \ln\left(\frac{x}{198}\right)$$

c. Using the plot above, evaluate $f^{-1}(500)$.

$$f^{-1}(500) = -0.5$$